

electricity
north west

Bringing energy to your door



As-Laid Guidance for ICPs and IDNOs

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What we mean by 'as-laid'

'As-laid' refer simply to the information required to describe how new assets (e.g. cables etc.) are 'laid' following construction.

This information is provided using two documents:

- 1) final drawing of the amended/installed assets with associated measurements and detail
- 2) completed 'as-laid' drawing form

Why is it important?

We rely on as-laid information to ensure that our asset records are kept up to date. Accurate records are crucial for the health and safety of anyone working on our networks including our own operations engineers and also third parties.

Accurate asset records allow us to:

- Provide you with accurate quotes, that don't change (based on availability of existing assets already installed)
- Publish accurate information about live assets underground via [linesearchbeforeyoudig](#)
- Deliver contestable construction on time, as planned

They also allow you to:

- Provide your clients with accurate quotes that don't change (thereby supporting and maintaining better relationships with your customers)
- Help facilitate better health and safety for your staff working on our networks
- Avoid additional costs to your organisation as a result of duplicating work (brought about due to incorrect as-laid information)

As a DNO we are regulated to record the location of every item as reasonably practicable, under Regulation 15 of the Electricity Safety, Quality and Continuity Regulations 2002.

However, as we have opened up our networks to third parties we believe this is a shared responsibility amongst everyone who accesses our network, for the benefit of all working on our network.

The information we provide in this guide must be followed to provide quality asset information, so that we can continue to provide a quality service to third parties requesting our asset records.



Recommendations

Based on this review our recommended next steps and outputs, to address these findings are:

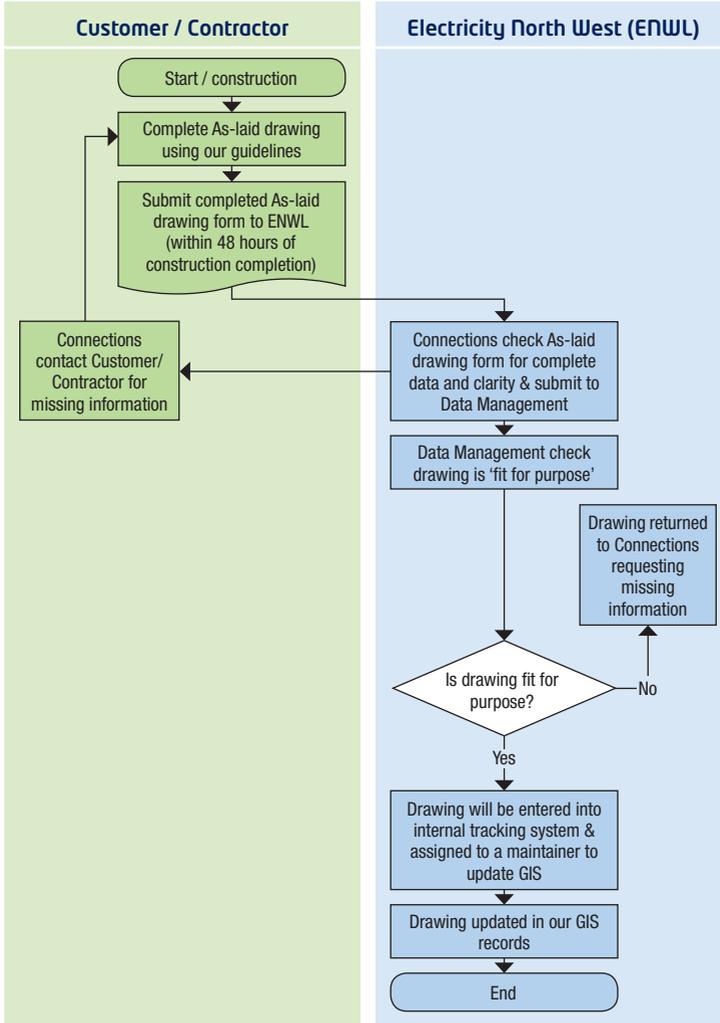
1. Provide guidance for customers on what information is to be included within their drawing and what format it needs to take to be legible and interpreted correctly and consistently.
2. Stress to customer that prompt return of drawings is crucial to make sure that other customers are given the most up to date and accurate drawings.
3. Support customers upfront to reduce the risk of lengthy clarifications and delays to records being updated

This document was developed to address each of these recommendations to benefit you and other third parties accessing and working on our networks.



Process and timescales

The high level process from construction through to updating our records is mapped  below.



How to provide accurate records?

In the final drawing and form, there are a number of critical details we require to make sure that our records are as accurate as possible.

The position of any underground apparatus placed, moved or uncovered during works must be surveyed to an accuracy of +/- 0.1 metre (100mm).

Drawings must be legible, if we can't interpret the drawing this will cause delays in updating our records and will require more of your time to correct.

Below is our checklist of information you must provide with your 'as-laid' drawing and form.

- Exact location of the work (site address)
- Ordnance survey Grid Reference
- Title
- Type of job (i.e. underground/overhead, HV/LV, and general description of what has taken place on site)
- Dates of on-site work
- Type of joint (for each included in the works)
- Cables cores, sizes, material and type
- Auxiliary cable type, no. of cores/fibres/pairs
- The phase connection of each single-phase service
- A commission or decommission driver – you can find definitions of these on the as-laid drawing form
- Project or cost code (i.e. your '55' number or equivalent)

- The size, type and colour of ducting, plus indication of which ducts are in use
- The positions of ends of ducting, including any breaks in the run of ducting (shown in measurements).

Where you've laid more than one duct in the same trench, you must also include a vertical cross section drawing.

- The position of all road crossings (using at least two measurements to locate the ends of ducts)
- The depths of laid cables, where they vary from standard depths
- Include the 'north point'
- Details of any non-standard work (e.g. non-standard cables you might find during excavation for us to update our records.



What about overhead assets?

When dealing with the overhead network the level of information required is just as important as with the underground. Sometimes if the assets are visible, the view is that the safety implications are not as far reaching.

We do need to record changes in our overhead network in as much detail as we do for our underground network, and for all the same reasons. We need:

- Types of pole (i.e. intermediate, angle, section)
- Measurements indicating positioning of poles
- New pole numbers (used to identify them individually)
- Size of the conductors
- Pole numbers from which the new conductors run to and from
- Whether the pole has been re-used or replaced
- If stays are used, clearly mark in the correct direction from the pole it's attached to
- Whether the service to the pole is underground or ariel flights
- When overhead services are attached to properties, identify how they are attached (i.e. surface wiring or mural wiring under eaves).



Cross-section drawings

When is it needed?

A cross section diagram is required when a two-dimensional drawing is not adequate to record the installed assets.

This may be for example when:

- 1) more than 1 duct or more than 1 cable are installed on top of each other
- 2) cables cross over each other or side by side
- 3) when a cable is laid on a route where there is an existing cross section

What information do I include?

- Location of cross section
- Viewing direction of the cross-section
- Number/size/material and colour of ducts
- Which ducts have cable in and which are empty
- Depth from surface to the top of the ducts
- Depth of surface to cables (when not in ducts)
- No. of cores/pairs/fibres, core size and construction material, cable type and voltage – of all cables, including pilots and any out of commission cables

- General notes regarding the installation – i.e. laid under tiles etc.
- In the third scenario above, you must provide the relationship between the new cable and those shown on the existing cross section.

Measuring Do's and Don'ts

- DO Measure from permanent features which are, or would be shown on an ordinance survey map. For example buildings (gable ends), kerb lines, walls or bridges.
- DON'T measure from trees, gate posts, sheds, bay windows, letter boxes, lamp posts, manhole covers, gullies or any other features that could be moved.
- DO measure the route of each cable accurately, including deviation from straight lines
- DO measure to a suitable scale (1:250, 1:500, 1:1250, 1:2500)
- DO show the dimension lines and measurements for joint and cable positions on CAD drawings. GPS measurements are not acceptable

There are two methods for measuring our assets: triangulation and offset. Please see Appendix 1 for more details.



5 Top Tips

- 1** Save yourself time in hand-drawing or drawing the plot in CAD from scratch, start with our original records (via our website) and either mark up the changes on these diagrams, or use these as the background for your CAD drawing. This will save you time producing the drawing, and help us interpret it thereby reducing the risk of it being sent back to you for revision or clarification.
- 2** If you see another cable onsite in close proximity to the one you're working on, there's a chance we may mistake that for the one in your drawing. Remember to include other ducts or cables installed close by in your as-laid diagram.
- 3** Submit your drawings on time – your own planning activities and design quotes can be affected by the quality and timing of your own 'as-laid's'.
- 4** If possible include a copy of the construction plans and a confirmation that the work on site reflects the original plans. This helps us to compare what was originally planned, to what was carried out – sometimes things can change due to unforeseen circumstances on site.
- 5** Promote efficiency in process – by providing the right information upfront, it will reduce the amount of re-work needed later on and potentially costs incurred with re-visiting site and / or uncovering already reinstated work.



Measuring methods

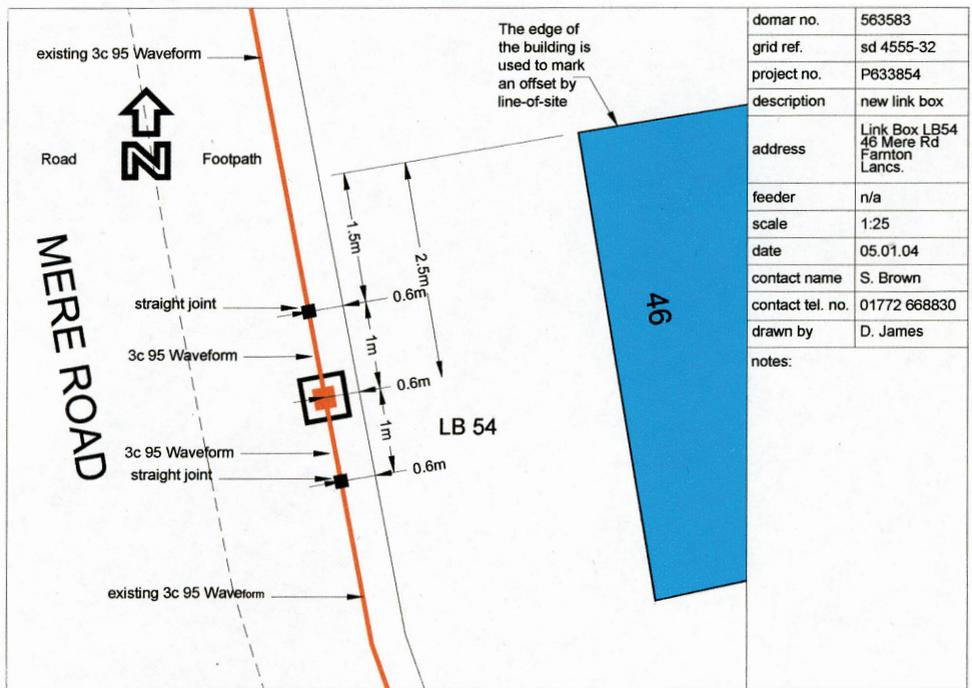
There are currently two methods of measurement for recording Electricity North West's assets known as triangulation and offset.

The offset method is the preferred method of recording for Data Management.

The offset method entails taking two measurements approximately at right angles to each other from fixed points to the asset to accurately locate its position.

Offset method

Record offset measurement from centre of link box repair to centre line of the cable.



Measuring methods

Remember

- Use a standard 30 metre fibre tape/wheel measure and do not measure over humps of earth or from tops of walls.
- Always obtain permission before measuring on private land.
- Do not measure from tree roots, telephone boxes, letter boxes, lamp posts, manhole covers, gullies, front doors or bay windows, they are seldom marked on maps and are prone to being moved without warning.
- Measure at no more than twenty metre intervals and at the point where the cable changes direction, size or material.
- Always mark up your measurements in metres
- Always measure from a permanent feature which is, or would be shown on an Ordnance Survey map to enable clear and concise understanding of the completed work

Commission and Decommission Drivers

In all instances where a new cable is installed, or a cable is disconnected, removed or re-connected to the network, Electricity North West are required to provide a reason why this cable has been affected.

The necessity to record this information relates to Ofgem's definition of Capital Expenditure (Capex).

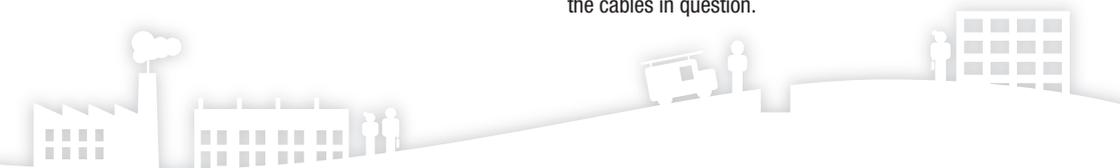
This reason is known as either a Commission or Decommission driver.

This information should be included on all work instructions, minor or major.

Each piece of work should also have a unique project/cost Code (Acct Code) on any work instruction, minor or major.

Where this information has been omitted Data Management reserve the right to reject the drawing,

Relevant boxes have now been made available to record this information on the new 'As-Laid Drawing Form'. Please see following page. If different driver codes are required for different parts of the job, it is good practice to illustrate these on the actual drawing with the codes written by the cables in question.

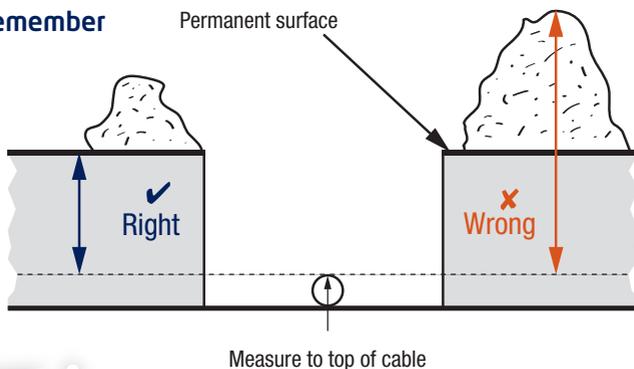


Recording depth

The following points outline when it is necessary to record depth, and how this should be recorded.

- Depth must be recorded if different from 450mm LV and 600mm HV, for 33KV and above, depths must be recorded at all times
- Depth must be recorded to an accuracy of +/- 0.05 metres
- Depth should be recorded in metres, to two decimal points
- If a permanent surface does not exist, such as on a new housing estate: record the final finished depth, measure from the kerb line or back footpath line
- Where a permanent surface does exist, such as when cables are laid in an existing road, record:
 1. The specified depth of cable
 2. The depth at where there are major deviations, such as when cables go under other buried apparatus, tree roots, or at the position of horizontal bends
- Mark depth on the map at the point at which you measured it
- For a small excavation or opening, record the depth of the apparatus uncovered at that point
- Measure from the permanent surface level to the top of the cable where possible, as shown in the sketch below
- Record the date when the depth is measured

Remember



Definitions for Commission/Decommission Drivers

Code	Driver	Definition
A	Demand Connections (DNO)	Assets built by us
B	Demand Connections (ICP)	Assets built by 3 rd parties.
C	Diversions	Replacement or upgrade of existing assets in respect of performing diversion work.
D	Reinforcement (P2/6)	Assets installed/replaced to reinforce network to provide additional network capacity.
E	Reinforcement (Fault Levels)	Assets installed/replaced to reinforce network to prevent the fault level of the network equipment or prevent equipment fault levels from being exceeded.
F	ESQCR	Assets installed/removed to comply with ESQCR regulations.
G	Asset Replacement	Old assets replaced by new ones because the old ones were worn out.
H	Asset Replacement (Consequential)	Old assets replaced by new ones because another associated asset needed to be replaced and it was sensible to change this one at the same time.
I	Asset Refurbishment	Planned replacement of assets to restore the asset to its original condition (or modern equivalent spec)
J	Rising and Lateral Mains	Investment undertaken on ENW owned cable or busbar systems in multi occupancy buildings.
K	VA (Within Nat Park or AONB)	Assets installed/replaced to enhance visual amenity within National Park or Area of Outstanding Natural Beauty.
L	VA (Outside Nat Park or AONB)	Assets installed/replaced to enhance visual amenity outside National Park or Area of Outstanding Natural Beauty.
M	Generation Connections (DNO)	Assets built/replaced by us for generation purposes.
N	Generation Connections (ICP)	Assets built by 3 rd parties for generation purposes.
O	Low Carbon Networks	Costs incurred specifically to build networks with a low carbon impact.
P	Faults	Reactive replacement of an asset following its functional failure.
Q	NTR	Non-Trading Rechargeable (Work on an asset that was at the request of a third party, i.e. a service alteration)
R	Other	Assets installed/replaced for any reason not defined by this list eg 3 rd party damage to our equipment, transfer of stlg after fault
S	Dismantlement (use for Decommission only)	Assets removed from network for any reason not defined by this list, but not replaced.

Additional Comments	
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Confirmation of Drawings received by Data Management (to be signed upon receipt)			
Signature		Date Received	
Print Name		Date Received	



Requirements for updating records at overhead lines and substations

The following section shows the information that is required to accurately record each electricity asset.

Substation sites

- Geographical position of the site with respect to Ordnance Survey Map background
- Boundary of site
- Location and external dimensions of any buildings or compounds

Transformer

- Geographical position in substation
- Type of transformer
- Rating
- Transformer number
- Infeed/Outfeed voltages
- Ground, pole or other mounting
- Indoors or outdoors
- Plant reference (CRMS)

HV equipment

- Topographical layout in substation
- HV switch name
- Operating voltage
- Outdoors or indoor
- Ground, pole or other mounting
- Plant reference (CRMS)
- Nominal Rating
- Status – open or closed
- HV metering or not
- Ownership
- Installer/Connector

Low voltage equipment

- Geographical position in substation
- Type of LV board
- Outdoors or Indoors
- Ground, pole or other mounting
- Plant Reference (CRMS)
- Circuit Names
- Switch status – open or closed
- LV way numbers



Overhead lines

- Poles/Towers
- Geographical position of the pole/tower position
- Type of pole/tower
- Pole/tower construction material
- Pole/Tower number
- Pole/Tower plant reference (MAMS)
- Number and position of the poles and stays
- Details of all earthing conductors attached to pole including material size and length

Pole mounted equipment

- As for equipment in substations

Services

- Basically captured as underground cables but with some exceptions
- If aerials then the following is needed
 1. Route of aerials
 2. Start point (whether pole or building)
 3. Type of conductor
 4. Conductor Material
 5. Number of conductors
 6. Operating voltage
 7. Type of insulation

Conductors

- Type of conductor
- Conductor material
- Number of conductors
- Operating voltage
- Type of insulation
- Jumper positions and whether they are open or closed



Example sketches of marking up records

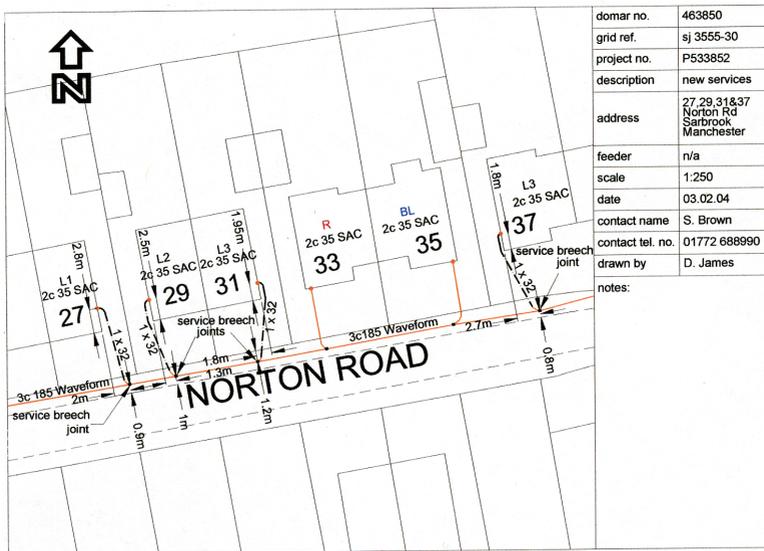
Mains and services in existing built up area

PLEASE NOTE:

Dimensions are not shown on the live GIS system unless 'not to scale'

Always show:

- Measurements from kerb lines, gable ends etc.
- Measurements to ends of road crossings and ducting
- Road and street names
- Cable and duct sizes and types
- House or plot numbers
- Phase colours (brown, black, grey or L1, L2, L3 as appropriate)



Example sketches of marking up records

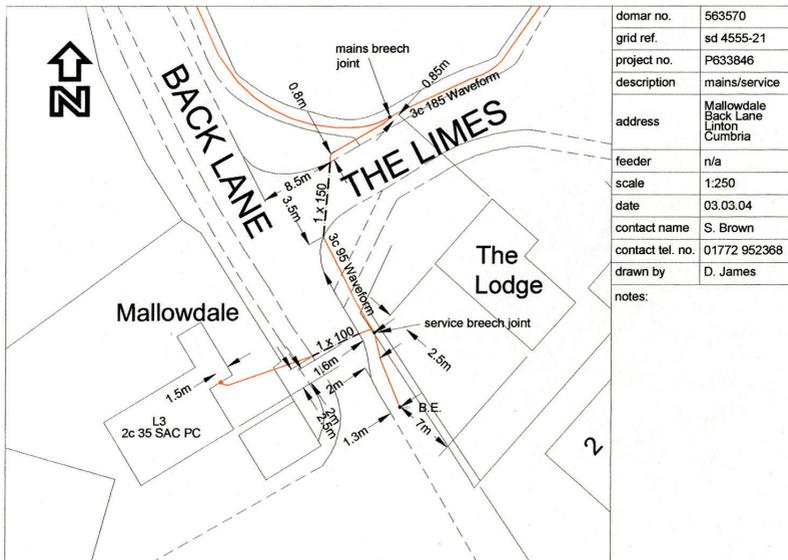
Mains, services and jointing

PLEASE NOTE:

Dimensions are not shown on the live GIS system unless 'not to scale'

Always show:

- Phase colours (brown, black, grey or L1, L2, L3 as appropriate)
- Mains and cable size and type
- Plot or house numbers
- Road or street names
- Adjacent plots, houses or landmarks
- Breaks in ducting or deviations
- Joint positions



Example sketches of marking up records

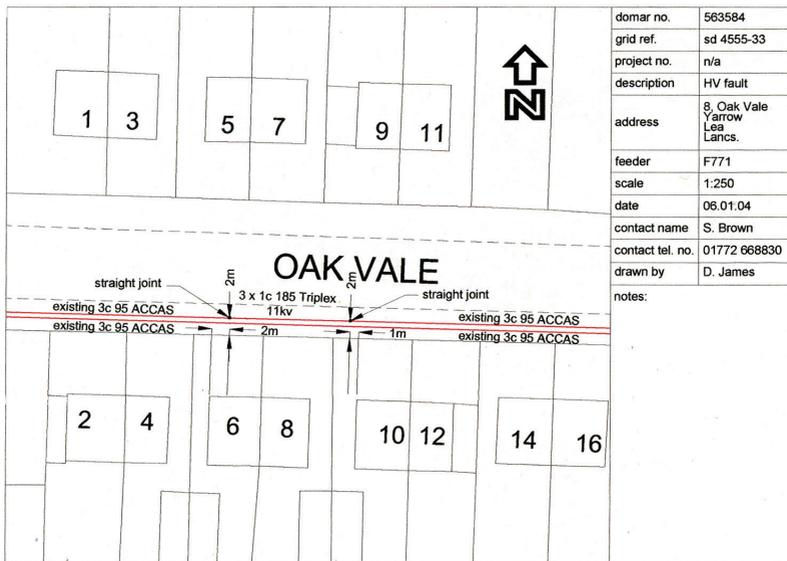
HV fault

PLEASE NOTE:

Dimensions are not shown on the live GIS system unless 'not to scale'

Always show:

- Main and size type
- Road or street names
- Breaks in ducting or deviations
- All joint positions
- Feeder title/number



Example sketches of marking up records

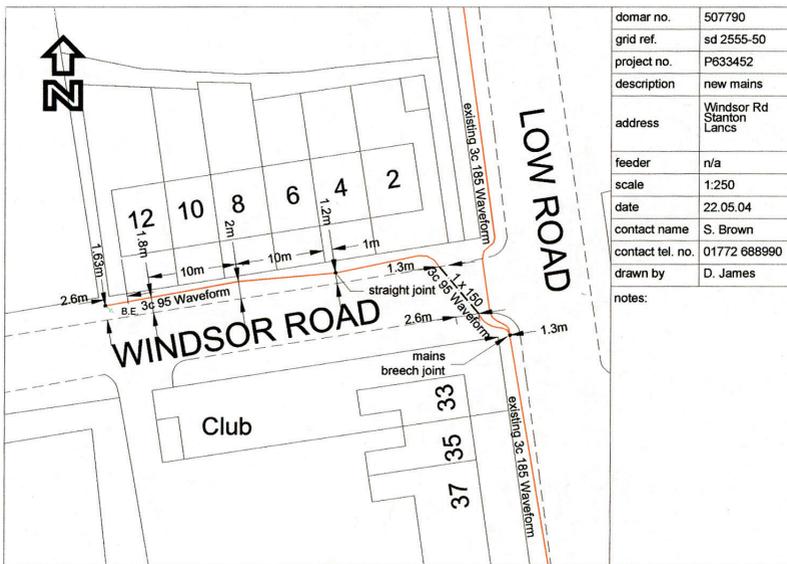
Mains

PLEASE NOTE:

Dimensions are not shown on the live GIS system unless 'not to scale'

Always show:

- Mains cable size and type
- Road or street names
- Adjacent plots, houses or landmarks
- Breaks in ducting or deviations



Example sketches of marking up records

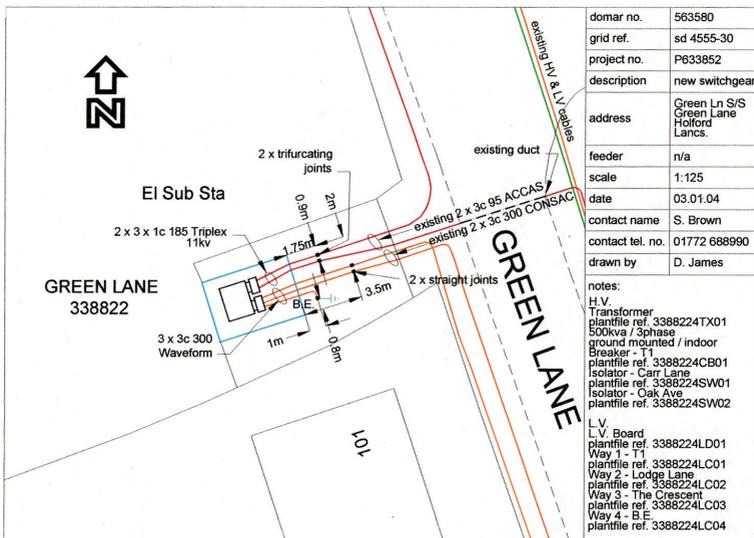
Switchgear change

PLEASE NOTE:

Dimensions are not shown on the live GIS system unless 'not to scale'

Always show:

- Mains cable size and type
- Road or street names
- All joint positions
- Substation name
- LV way details/open points
- HV details
- Position of all equipment within the substation



Example sketches of marking up records

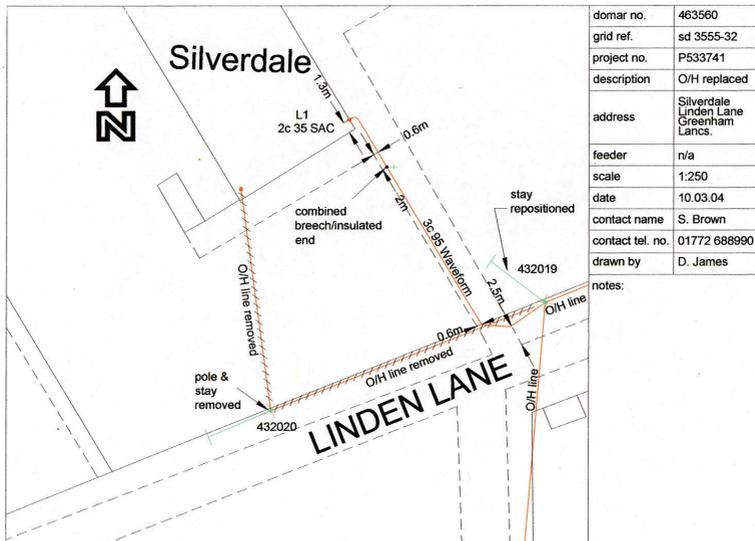
Overhead replacement/service

PLEASE NOTE:

Dimensions are not shown on the live GIS system unless 'not to scale'

Always show:

- Mains cable size and type
- Road or street names
- Phase colours (brown, black, grey or L1, L2, L3 as appropriate)
- Breaks in ducting or deviations
- Details of any overhead equipment removed
- Pole numbers
- All joint positions





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